



**Golden
Empire
Amateur
Radio
Society, Inc.**

www.gearsw6rhc.org

"Dedicated to Public Service"

THE RADIATOR



W6RHC
IRLP #8170



P.O.Box 202 Chico, CA 95927

March 2020 Newsletter

GEARS Founded August 13, 1939

News

Our February meeting was very enjoyable.

Kevin Fullerton WB7SKS gave an excellent presentation about the community GMRS communications project in Magalia and Oroville. You can watch a video about this project here: www.oesnews.com. If you'd like to help out contact Kevin at orn86@msn.com.

We had a great presentation on Raspberry Pi by Rick Hubbard KI6VOS, Michale Favor N6FAV and Kent Hastings, WA6ZFY. Michael presented a long list of uses for the Pi in amateur radio. We will continue with an introduction to Python programming for the Pi at our March meeting. In addition Bennett Laskey, K6CEL will talk about his recent trip to Quartzfest.

Also at our March meeting we will be holding the drawing for the Yaesu FT-70DR handheld digital radio. You'll get entered into the drawing just by attending the GEARS breakfast and/or the GEARS meeting.

The Sierra Foothills Amateur Radio Club is hosting their 6th Annual Hamfest in Loomis, California, on Saturday, March 21st, 2020. For more information go to <https://hamfest.weebly.com>

Kent Hastings, WA6ZFY has reserved the Masonic Lodge back lawn for Field Day June 27 - 28.

We are currently having some issues with our new repeater on Mt. St. John. Michael is working on this, however we may not be able to fix it till spring.

Wishing a happy March birthday to GEARS members Larry Dorn, N7MRN and Margie Wolske, KJ6SEV.



'73
Jim Matthews K6EST
jiminchico@yahoo.com
530-893-3314



Join GEARS on Facebook
www.facebook.com For
timely news and additional
information.

March 2020 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 8pm OARS Net	2 7pm GARS Net 8pm ARES Net	3 7:30pm GEARS Net	4	5 7pm PARS Net 7:30pm Simplex Net	6	7
8 8pm OARS Net	9 7pm GARS Net 8pm ARES Net	10 7:30pm GEARS Net	11	12 7pm PARS Net 7:30pm Simplex Net	13 7pm OARS Meeting	14 9am Chico Breakfast GEARS Board Meeting
15 8pm OARS Net	16 7pm GARS Net 8pm ARES Net	17 7:30pm GEARS Net	18	19 7pm PARS Net 7:30pm Simplex Net	20 7pm GEARS Meeting	21 7am Loomis Hamfest
22 8pm OARS Net	23 7pm GARS Net 8pm ARES Net	24 7pm ARES meeting 7:30pm GEARS Net	25	26 7pm PARS Net 7:30pm Simplex Net	27 7pm GEARS Meeting	28 9am OARS Breakfast
29 8pm OARS Net	30 7pm GARS Net 8pm ARES Net	31 7:30pm GEARS Net				

VEC Testing, FCC License Exam First Sunday of every even numbered month, at the Butte County Search and Rescue Building. Written test at 2:00 pm. For information or registration call Tom Rider, W6JS 514-9211

Chico Breakfast 2nd Saturday of the month 9 am Farmers Skillet 1818, 690 Rio Lindo Ave, Chico

GEARS Board Meeting 2nd Saturday of the month at Vitalant (formally Bloodsource) following the breakfast.

OARS Meeting Second Friday of the month, 7:00 pm, at St. Paul's Church Parish Hall, 1430 Pine St., Oroville

GARS Meeting Second Thursday of the month, 6:30 pm Lutheran Church Hall, 565 Main St. Artois.

Butte ARES Meeting 3rd Tuesday, Except Nov & Dec. at Chico Veterans Hall 7pm. Contact Dale Anderson, KK6EVX 826-3461 for more information.

GEARS Meeting, third Friday of the month, Butte County Search and Rescue Bldg., Chico. Social hour 6:00 pm, meeting at 7:00 pm.

OARS Breakfast 4th Saturday of the month 9am Gold Country Casino & Hotel, 4020 Olive Hwy, Oroville

NETS:

OARS Club Net Sunday 8pm 146.655 Mhz - PL 136.5

GARS Club Net: Monday, 7:00 pm 147.105 MHz + PL 110.09

Butte ARES Net Mondays 8pm 145.290 MHz - PL 110.9

Yuba Sutter Club Net Monday 7pm 146.085 MHz + PL 127.3

GEARS Club Net Tuesdays 7:30 PM 146.850 MHz - PL 110.9

PARS Club Net Thursday 7pm 145.290 - PL 110.9

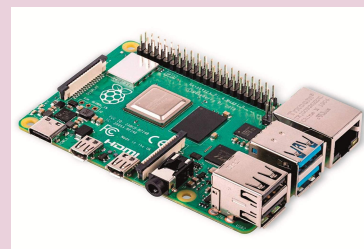
Simplex Net Thursday 7:30 p.m. 146.52 no tone

Yuba Sutter ARES Net Thursdays 7pm 146.085 MHz + PL 127.3

Sacramento Valley Traffic Net Nightly 9:00 PM 146.850 MHz - PL 110.9

Slice of Pi

At our March meeting Raspberry Pi tutorials will continue with an introduction to Python Programming by Rick Hubbard KI6VOS. If you have any questions contact him at rick.hubbard.email@gmail.com.



What Can Hams Expect from Solar Cycle 25?

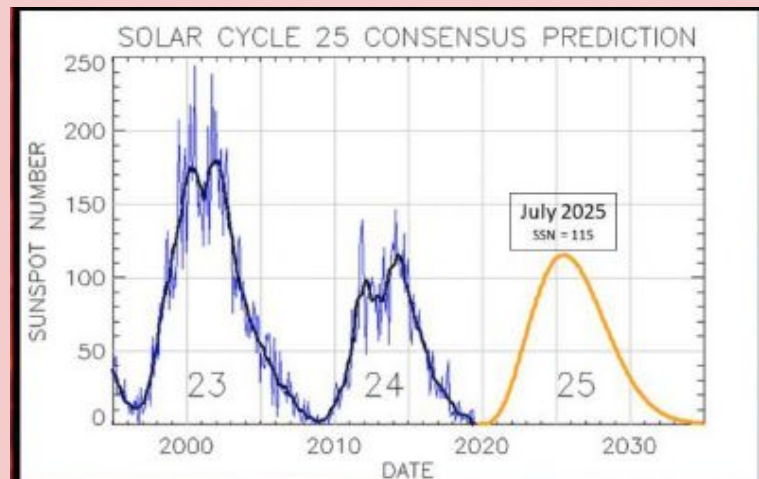
By Wayne KE8JFW

The Solar Cycle is one of many things about Ham Radio that we wish we had more control over—right up there with our HOA boards and thunderstorms on Field Day.

A lack of solar activity makes working the bands from 14-28 MHz (20 through 10 meters) and 50 MHz (6 meters) a challenge. The amount of sunspots, and correlating solar activity, decreases or increases according to a predictable 11-year cycle. The next solar cycle (the 25th since they were first recorded in 1755) looms ahead as we enter the new year.

As with most things relating to Ham Radio, opinions on what we can expect from Solar Cycle 25 vary widely, so whether operators will be grumbling about a dearth of sunspots or happily filling log books with a ridiculous number of long-distance contacts is yet to be seen. The general belief among the scientific community is that we're in for another 11 years comparable to the less-than-stellar Solar Cycle 24—and we all know how much everyone enjoyed that.

Published December 9, a report on Solar Cycle 25 from an NOAA/NASA co-chaired, international panel predicted “a peak in July, 2025 (+/- 8 months), with a smoothed sunspot number (SSN) of 115. The panel agreed that Cycle 25 will be average in intensity and similar to Cycle 24. Additionally, the panel concurred that solar minimum between Cycles 24 and 25 will occur in April, 2020 (+/- 6 months). If the solar minimum prediction is correct, this would make Solar Cycle 24 the 7th longest on record (11.4 years).”



Just for fun, we took a look back at predictions for Solar Cycle 24. Some camps predicted it would be the weakest cycle in more than a century; others trumpeted the arrival of one of the most intense cycles on record. A May 2009 article on Spaceweather.com summarized what the experts at NOAA's Space Weather Prediction center anticipated:

“The panel predicts the upcoming Solar Cycle 24 will peak in May 2013 with a daily sunspot number of 90. If the prediction proves true, Solar Cycle 24 will be the weakest cycle since number 16, which peaked at 78 daily sunspots in 1928, and ninth weakest since the 1750s, when numbered cycles began.”

By 2012—three years into Cycle 24—experts generally agreed that Hams wouldn't be jumping for joy over what they could expect for the next eight years. And they were right. Solar Cycle 24, which began in December 2008, peaked in April 2014 with a 23-month smooth sunspot cycle of 81.1. In 2019, the sun displayed no visible sunspots for well over 269 days—surpassing the number of blank days in 2008 (268) and making it the quietest sunspot year since 1913.

What lies ahead for Solar Cycle 25? We'll just have to get on the air and find out for ourselves. And remember, this may be a good opportunity to enjoy the many perks of UHF/VHF operation.

Satellite Basics: Guide to Ham Radio Satellite Operating

By Sean Kutzko, KX9X

One of the great things about Ham Radio is the endless ways you can enjoy the hobby. If you feel your Ham Radio enjoyment needs a shake-up, or you're new and looking for interesting ways to get more involved, check out satellite operating. There are over two dozen ham radio satellites in orbit right now, and they allow short QSOs over a few thousand miles to take place! Several satellites use FM, while others use SSB or CW, and a few more use digital modes.

Satellite operating is inviting for several reasons:

- You can get started with very simple gear.
- Most satellites are accessible by Technician-class licensees.
- Satellite passes are 100% predictable in advance and last only 15-20 minutes at most.
- They aren't affected by the ups and downs of propagation like the HF bands are.

What You Need to Get Started

To make QSOs via satellite, you will need to be able to transmit and receive on both 2 meters and 70 centimeters. For the FM satellites, this can be as simple as a dual-band HT, or two separate HTs. You will also need an effective antenna for satellite work, and a way to track satellites as they pass overhead. You'll also need a diplexer, which isolates your transmitted signal from your receive radio. Without it, you will overload the front end of your receive radio, making QSOs impossible. Several manufacturers offer diplexers. If this sounds like a lot to take on, it's nowhere as difficult to get on the FM satellites as you would think!



FM satellites function like an orbiting repeater; only one person can access the satellite at a time. You transmit, or uplink, on one band and receive, or downlink, on another. For example, to use the popular FM satellite SO-50, you transmit on 2 meters and receive on 70 centimeters. Other satellites are the opposite, transmitting on 70 centimeters and receiving on 2 meters. FM satellites will require you to have a CTCSS (PL) tone on your transmit signal.

Satellites transmit with very little power, often less than one watt. However, this is more than enough for you to hear them, because they are line of sight. And when they're right overhead, there (hopefully) aren't any obstacles in your way! While some have been able to hear and make QSOs through satellites using mobile whip antennas, you will have better success by using small directional antennas; two commercial options are the Arrow dual-band handheld Yagi, which has 3 elements on 2 meters and 7 elements on 70 centimeters, or the Elk 5-element handheld log periodic antenna. The Arrow has an optional built-in diplexer, while the Elk doesn't need one if you're using a single radio. You can also build your own to get started; check out this article on cheap and easy Yagi satellite antennas.

Lastly, you have to be able to track when a satellite is going to be overhead. Generally speaking, you can only hear a satellite when it is above your local horizon. Some passes will only be a few degrees above your horizon, while others may go directly overhead. Every pass is different. Most satellites pass overhead about 5-6 times a day, and you need to be able to point your antenna at them as they move across the sky. The AMSAT website has a pass predictor on their site, or you can check out the site N2YO.com for pass predictions. There are also

smart phone apps that track satellites as well. iPhone users can check out GoSatWatch (not free, but very good), or SatSat (free, but not as many features). Android users can check out AMSATDroid or Heavens-Above.

The position, in degrees, that the satellite first appears above the horizon is called Acquisition of Signal, or AOS. The position the satellite goes back down below the horizon is called Loss of Signal, or LOS. A common stumbling block for new satellite users is remembering that you need to keep pointing your antenna toward the satellite, not the station you are contacting.

Satellites and the Doppler Effect

Because the satellite is transmitting a signal as it moves across the sky, you will have to work around the Doppler Effect. It's Just like a train whistle that changes pitch as it passes you. Doppler is more noticeable on 70 centimeters than 2 meters; if the satellite you're trying to work has a 70 cm uplink, you will have to adjust your transmit frequency as it passes overhead. If it has a 70 cm downlink, you will have to adjust your receive frequency throughout the pass. An easy way to do this is to program a series of frequencies in your radio's memory and toggle the memory channels throughout the pass.

First Steps in Satellites

As with trying anything new, it's best to take small steps as you learn. Here's a simple exercise to help you get started: listening for the AO-91 FM satellite.

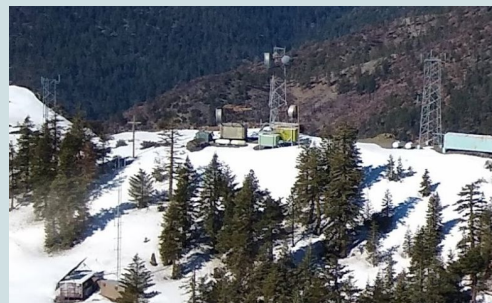
- Go to AMSAT or N2YO.com, or download one of the satellite tracking apps mentioned earlier, and get the latest pass information on the FM satellite AO-91 (also known as Fox-1B). AO-91 has a downlink frequency of 145.960 MHz, so it won't be as affected by Doppler as other satellites.
- Use your current 2 meter radio and hook it up to the best antenna you have. If you're trying this from your car with a mobile whip, try and go to a park or other area with as clear a horizon as possible. If you have a directional antenna, you will have to rotate your antenna to follow the satellite across the sky as it goes overhead.
- At AOS, open the squelch on your radio so you can hear static all the time. Start listening for signals through the static. With luck and experience, you will soon hear signals coming through the static as the pass progresses, until the pass is over.
- Try several different passes at different elevations above the horizon.

Check out the web site of [AMSAT, the Radio Amateurs Satellite Corporation](http://amsat.org), for news and more operating tips.

GEARS / GARS New Repeater

IS ON THE AIR

W6RHC West is 145.410 Mhz
PL is 123.0 Negative offset.



GEARS Century Club Members

Rick Hubbard
Bennett Laskey

Thank you very much for your extra support



WIN A NEW DIGITAL YAESU FT-70DR RADIO

Attend GEARS events until March 20th and you will be entered in a drawing for a dual-band digital HT. You get an entry ticket each time you visit: GEARS meetings, monthly GEARS breakfasts, GEARS training event or GEARS VEC.

Club Officers:

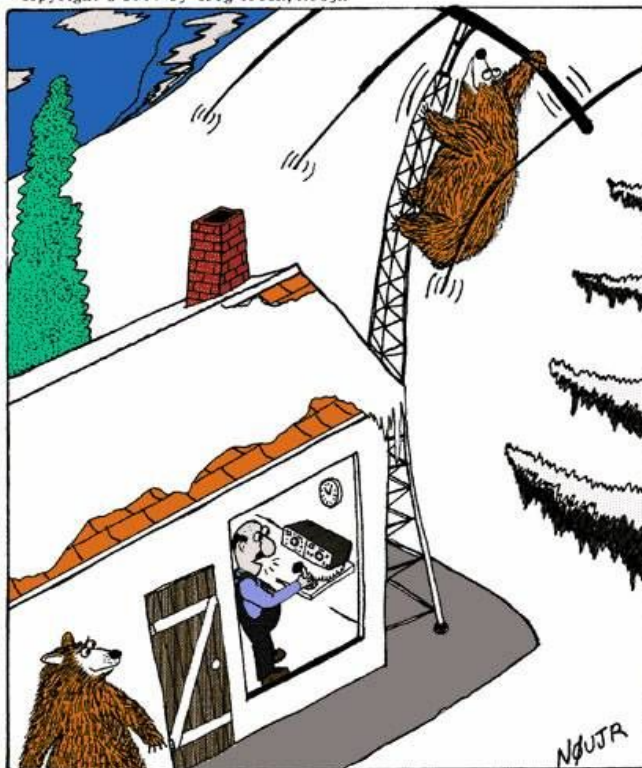
President.....Jim Matthews, K6EST
 Vice-President.....Kent Hastings, WA6ZFY
 Secretary.....Susan Check, KE6LTY
 Treasurer.....Kathy Favor, K6FAV
 Director.....Rick Hubbard, KI6VOS
 Director.....Dale Anderson, KK6EVX
 Director.....Bennett Laskey, K6CEL
 Past President.....Tom Rider, W6JS
 VEC.....Tom Rider, W6JS

DO YOU HAVE OLD QST MAGAZINES IN SEARCH OF A NEW HOME?

Gene Wright has that future home for your QST's, through his project to place QST Magazines in professional offices throughout Chico. Labels placed on the QST's will advertise the Golden Empire Amateur Radio Society, encourages the readers to consider Ham Radio as an interesting hobby, one of not only fun, but which provides opportunities for many and various community services.

Bring your QST's to Gene at the Club meetings or contact: Gene WA6ZRT 530-519-2519

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"Hang on a minute Larry...my SWR is jumping...I'm going outside and see what the problem is..."

HEY, WHAT'S YOUR
CELL NUMBER?

(VIOLET BROWN GRAY) —
UH, I MEAN, (718) —

OKAY, YOU ARE PUTTING
DOWN THOSE RESISTORS
AND GOING OUTSIDE
FOR A WHILE.

THAT'S PROBABLY
A GOOD IDEA.

